

Serial No.: 09/235,686

**PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Ann Xiaoan Liu, et al.

Serial No.: 09/235,686

Filing Date: January 22, 1999

Docket: ACO6105PDUS

Examiner: M. Jackson

Group Art Unit: 1773

**For: SYNTHETIC RESIN FILM FOR LAMINATES :  
AND METHOD OF PRODUCING SAME :****Assistant Commissioner for Patents  
Washington, D.C. 20231****DECLARATION UNDER 37 CFR 1.132**

I, Ann Xiaoan Liu, do hereby declare as follows:

1. I am the technical Manager at Casco Impregnated Papers Inc., Akzo Nobel, Cobourg, Ontario, where I have worked for 6 years.

2. I conducted and/or had control over the following comparative examples, Sample ID 1-5, in Table A, below. These comparative examples were made to show the importance of the substantially spherical nature of the low profile additive according to the present invention.

To exemplify this substantially spherical shape and contrast it with other types of additives, attached are copies of pictures (1) Zeeospheres ceramic microspheres, which have a substantially spherical shape, and calcium carbonate, mica and wollastonite, which have jagged edges and do not have a substantially spherical shape, (2) cellulose fiber, which have a fibrous shape and

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do not have a substantially spherical shape, and (3) Alumina ( $Al_2O_3$ ) (7 slides), which have jagged edges and do not have a substantially spherical shape.

In the examples of the invention, e.g. Sample Nos. 1-14 in Table 1 on page 9 of the specification, the presence of the low profile additive increases the scratch resistance compared to the scratch resistance in the absence of the low profile additive. Comparative examples, Sample ID 1-5, in Table A include an additive which is not substantially spherical, in contrast to the low profile additive of the present invention. The additive in Table A is alumina. As a result of using this additive, the scratch resistance is the same or worse compared to the scratch resistance in the absence of the additive.

Table A  
Scratch resistance test results  
using an additive which is not substantially spherical (alumina)

Sample ID	Paper basis weight g/m2	Film weight g/m2	Additive g/m2	Additive %	Scratch with additive	Scratch without additive
1	70	205	5.7	4.2	2.5	2.5
2	80	218	7.1	5.1	2.5	3.0
3	85	225	4.5	3.2	3.0	3.0
4	83	215	4.7	3.6	2.5	2.5
5	105	285	6.5	3.6	2.0	2.0

3. I have determined the percentage of low profile additive in Sample Nos. 1-14, shown in Table 1 on page 9 of the specification, by using the disclosed amount of additive, the disclosed paper basis weight and the known typical film weight of treated decorative papers, as disclosed in the attached 1998 TAPPI Proceedings Plastic Laminates Symposium, August 17-20, 1998 ("TAPPI Proceedings"). According to TAPPI Proceedings, the "papers typically range from 80 to 115 grams per square meter, with an overall treated weight of 200 to 350 grams per square meter." TAPPI Proceedings at 76. These typical weights of the

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paper and treated paper are used to determine the resulting typical range of resin treatment percentage using the formula in TAPPI Proceedings at 77, which, in turn, is used to determine the film weight and, ultimately, the percentage of low profile additive in Sample Nos. 1-14.

The formula (TAPPI Proceedings at 77) calculates the weight of treated paper by dividing the basis weight of the paper prior to treating by the inverse of the resin treatment percentage (basis weight of untreated paper/inverse of resin treatment percentage = basis weight of treated paper). Thus, to determine the typical range of resin treatment percentages, I divided the basis weight of untreated paper by the basis weight of treated paper, which yielded the inverse of the resin treatment percentage, and then took its inverse.

Using the range of weights for treated and untreated papers and the formula, I determined that the typical range of resin treatment percentages is 60-66%. My calculations are shown below:

$80/200 = 0.40$  (the inverse of the resin treatment percentage is 40%);  
Thus, the resin treatment percentage is 60%.

$115/350 = 0.33$  (the inverse of the resin treatment percentage is 33%);  
Thus, the resin treatment percentage is 66%.

Based on the typical range of resin treatment percentages being 60-66%, I calculated the film weight of each of Sample Nos. 1-14 (in accordance with the paper basis weight of each of these samples) at 60% and at 66% and I used this data to calculate the % of Additive =  $\text{additive(g/m}^2\text{)} \times 100 / (\text{Film weight} - \text{Paper basis weight})$ . The results of these calculations are shown in Tables B and C below.

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Table B; 60 % resin content

Sample #	Paper basis wt.	Film wt.	Additive g/m2	Additive %	Scratch with additive	Scratch without additive
1	80	200.0	6.8	5.67	4.0	2.5
2	85	212.5	0.7	0.56	2.5	2.0
3	85	212.5	5.0	3.92	3.0	2.0
4	72	180.0	5.9	5.46	3.5	3.0
5	83	207.5	2.7	2.19	4.0	3.5
6	85	212.5	2.1	1.68	3.0	2.5
7	85	212.5	3.0	2.36	3.5	3.0
8	75	187.5	5.2	4.62	3.5	3.0
9	80	200.0	5.7	4.75	4.5	3.5
10	105	262.5	5.6	3.56	3.5	2.0
11	80	200.0	5.9	4.92	3.5	2.0
12	80	200.0	6.5	5.42	4.0	2.5
13	130	325.0	3.7	1.90	4.5	3.0
14	80	200.0	3.3	2.75	3.8	3.0

Table C; 66% resin content

Sample #	Paper basis wt.	Film wt.	Additive g/m2	Additive %	Scratch with additive	Scratch without additive
1	80	235.3	6.8	4.38	4.0	2.5
2	85	250.0	0.7	0.43	2.5	2.0
3	85	250.0	5.0	3.03	3.0	2.0
4	72	211.8	5.9	4.22	3.5	3.0
5	83	244.1	2.7	1.69	4.0	3.5
6	85	250.0	2.1	1.30	3.0	2.5
7	85	250.0	3.0	1.82	3.5	3.0
8	75	220.6	5.2	3.57	3.5	3.0
9	80	235.3	5.7	3.67	4.5	3.5
10	105	308.8	5.6	2.75	3.5	2.0
11	80	235.3	5.9	3.80	3.5	2.0
12	80	235.3	6.5	4.19	4.0	2.5
13	130	382.4	3.7	1.47	4.5	3.0
14	80	235.3	3.3	2.13	3.8	3.0

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both,

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under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent resulting therefrom.

DATE: Nov 6 / 00

BY:   
Name: Ann Xiaolan Liu  
Title: Technical Manager